

Game-based Learning: Opportunities and Challenges for 21st Century Education

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Outline

- ▶ De|Re-constructing “education”
- ▶ Opportunities & challenges
- ▶ Epistemology and (human) learning
 - ▶ Possession, profession, and performance (3 P’s)
- ▶ Learning *with* games
 - ▶ *Escape from Centauri 7*
 - ▶ *Legends of Alkhimia & Statecraft X (under construction)*
- ▶ Opportunities & challenges revisited
- ▶ Concluding remarks

“The problem is not that we’ve set the bar too high and failed but that we’ve set the bar too low and succeeded.”

Sir Ken Robinson:
“Do schools kill creativity?”

“ . . . as for the
Future, your task
is not to foresee it,
but to enable it.”

Antoine de Saint Exupéry

Opportunities

- ▶ “Deschool” society through the “subversiveness” of play
- ▶ Enact performance epistemology
- ▶ Educate for literacy, digital epistemology, and active citizenship

Challenges

- ▶ Schools are socially and culturally bound spaces
- ▶ Epistemic shift is foundational and requires criticality and openness of thinking
- ▶ Providing research evidence in design work through inductive science and process philosophy

Refocusing learning on epistemology in a simulation and gaming world

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Abstract *Advances in technology provide valuable opportunities for furthering the goals and methods of education. In this paper, we argue that, unfortunately, many of these opportunities are not seized because of restrictive conceptions of education that constrain teachers to viewing the educational mission primarily in terms of providing instruction. Adopting a pedagogical stance on this issue leads us to a fundamental rethink of how technology can and should be used. From this reconsideration, we conclude that using technology predominantly to provide access to learning content is a misguided use of technology. Technology is rendered more powerful for learning objectives when it is used to support learning-by-doing. Technological advancement on its own does not lead to better education. Pedagogical guidance is vital if technology is to be productive for human learning.*

Introduction

The idea of using technology to advance the goal of education is not new. History reveals how various technological inventions markedly influenced teaching practices. From the early blackboard-based teaching approach of "chalk-and-talk", we have witnessed the impact of television, the overhead projector, computer-based slide

more sophisticated instances such as point-to-point video and rich media conferencing that require broadband satellite-based links and to mobile devices with wireless connectivity. From an educator's point of view, the pertinent questions are: What does technology advancement portend for education? Will education automatically be more readily available to all? Will the quality of student learning, with the benefit of technology, be automatically enhanced?

In order to answer questions of this nature, we need first to critically examine current practices related to technology adoption. We shall do this in the next section of this paper. In subsequent sections, we shall highlight the problems related to current practice and seek to understand the causal underpinnings of these problems. To this end, we shall consider the nature of human learning to better understand how learning can be supported effectively. We shall argue for a need to refocus learning on pedagogy rather than on technology. We shall then consider design implications for technology-based learning and suggest what might motivate change in the desired direction before we conclude the paper.

Current practices of technology adoption

As Weigel (2000) notes, the most widely adopted approach to technology adoption is simply that of porting the

Constructivism

- ▶ Broad assumptions (Doolittle, 1999)
 - ▶ Knowledge is not passively accumulated; rather, it is the result of **active cognizing** by the individual
 - ▶ Cognition organizes and **makes sense** of one's experience; it is not a process to render an accurate representation of reality (subjective, not objective)
 - ▶ Cognition is an **adaptive process** that functions to make an individual's behavior more viable given a particular **environment**
 - ▶ Knowing has roots in both **biological/neurological** construction, and **social, cultural, and language-based** interactions

New media, new literacies, new schools

Purushotma, & Weigel, 2006). As a developmental learning process, students learn to develop their own voice and sense of identity, and they learn to eventually function as full members of multiple authentic communities. School ceases to be a preparation for living. It becomes a participation in authentic everyday living. As media and knowledge workers, even while in school, students learn to work with digital technologies and new media to take the knowledge construction/reconstruction process continually forward (e.g. via machinima and mashups), with constant reinvention and recreation of knowledge, to achieve new ends and purposes (The New London Group, 1996). Thus, the epistemological focus shifts from an overriding concern with justified true belief, based upon norms of scientific method, to a performance epistemology: knowing as an ability to perform in ways that create personal, social, economic, and creative value. Performance epistemology is, in turn, situated in the context of collective and distributed intelligence (Levy, 2000; Salomon, 1993) where learning is no longer oriented toward "getting knowledge into individual heads."

Learning with games

In vogue . . .



Learning to *Be*

Game-related identities

Virtual identity

Real-world identity

Projective identity

This tripartite interplay of identities is powerful for learning because it is both **active** and **reflexive**.

SKIVE

Skills

Knowledge

Identity

Values

Epistemology

Developing identity

People tell others who they are, but even more important, they tell themselves and then try to act as though they are who they say they are. These **self-understandings**, especially those with strong emotional resonance for the teller, are what we refer to as **identities**.

Some learning design principles

- ▶ Learning is based on situated practice
- ▶ Learning is a form of extended engagement of self as an extension of an **identity** to which the player is committed
- ▶ Learning is interactive (probing, assessing, re-probing the world)
- ▶ There are intrinsic rewards within the game keyed to a player's level of expertise
- ▶ The game operates at a player's "outer regime of competence"
- ▶ The meaning of texts and symbols is situated in what one does; thus never purely verbal or textual
- ▶ Meaning/knowledge is distributed between the player's mind, objects in the environment in the game world, and other players

Play

- ▶ Developmental
- ▶ Extends the literary mind through creative imagination
- ▶ Liminal, liminoid, subversive
 - ▶ activities where conventional structure is no longer honored but, being more playful and open to chance, are much more likely to be **subversive**, consciously or by accident introducing or exploring different structures that may develop into real alternatives to the *status quo*.

Performance

- ▶ Patterned behavior:
doing and re-doing
- ▶ Self consciousness of
doing and re-doing
- ▶ Double consciousness:
actual vs. ideal
- ▶ A border, a margin, a site
of negotiation: the
source of new culture

Dialog

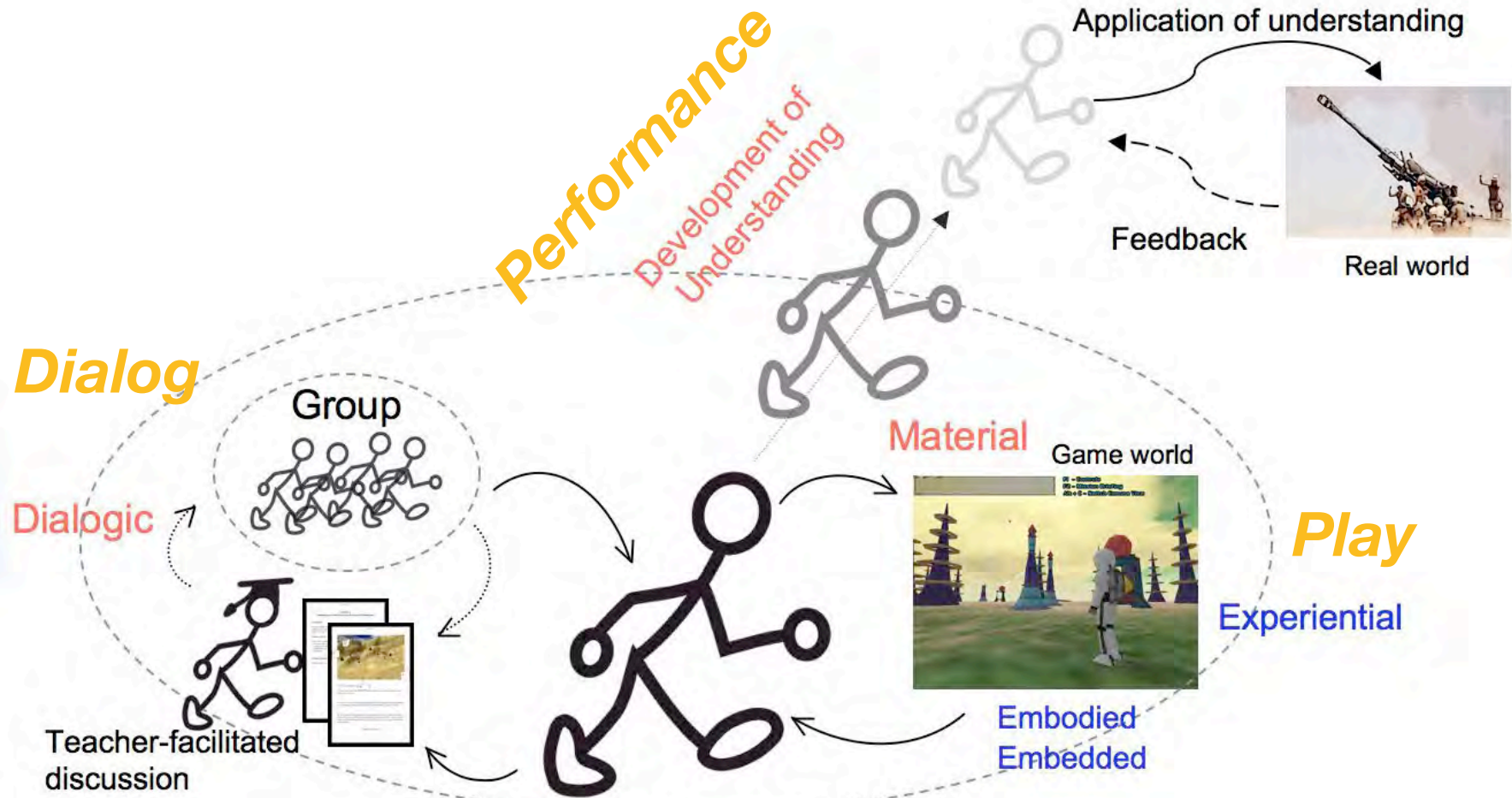
- ▶ Three senses (Linell, 2009)
 - ▶ conversation
 - ▶ inter-subjectivity (normative)
 - ▶ sense making, semiotic practice, action, interaction, communication
- ▶ Contextual
- ▶ Rabelais: Bakhtin

ESCAPE FROM CENTAURI

7

LOGIN
NEW PLAYER
QUIT

Generalizable Model: PDP (Centauri)



Legends of Alkhímia

Fostering authentic learning of chemistry within fictionalized game environments

STATECRAFT X

Trans-contextual learning: Student learning with mobile devices in a persistent-world game to construct meaning and identities

Opportunities revisited

- ▶ “Deschool” society through the “subversiveness” of play
- ▶ Enact performance epistemology
- ▶ Educate for literacy, digital epistemology, and active citizenship

Challenges revisited

- ▶ Schools are socially and culturally bound spaces
- ▶ **parents** need to be 're-educated'
- ▶ Epistemic shift is foundational and requires criticality and openness of thinking
- ▶ being → be-ing → becoming
- ▶ Providing research evidence in design work through inductive science and process philosophy

Concluding remarks

Transmission

Participation

Acquisition

Sense making
Identity construction
through Performance

Thank you!

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